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SOME LABORATORY APPARATUS.

By SIMON HENRY GAGE.

During the last two or three years the requirements of an unusually large class in the laboratory of Histology and Embryology made it desirable and indeed necessary that some modifications should be made in standard apparatus and facilities in order that the large number should have the same facilities for personally undertaking the principal methods that had been accorded to the smaller number. The first serious difficulty arose in connection with the holders for the paraffin blocks to be sectioned by the Minot ribbon microtome. Each microtome is regularly furnished with three holders of different sizes For fifty to seventy-five students to use one or even two ribbon microtomes when only three to six holders are available involves so much loss of time in waiting for one another or in hunting up the holders, that it seemed necessary to devise some cheap holder that could be supplied in such quantity that no waiting on that account would be necessary. It occurred to the writer that flat-headed wire nails, cut to the proper length, or flat-headed stove bolts of the right length and size, might be used.

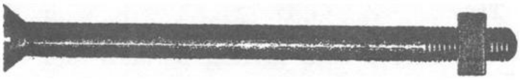

Fig. 1. Flat-headed stove bolt. If a long one is obtained it may be sawed off to avoid the thread at the end.

On investigation the stove bolts (Fig. 1) seemed most appropriate, and these were obtained. For small blocks the bolts answer without modification, but for most of the objects a larger surface than the head of the bolt was necessary. To increase the surface, an American cent was soldered to the head of the bolt. This coin is rough on the two faces so that either one is good for cementing the paraffin block to For still larger surfaces the old copper cent of the U. S. or copper coins from Canada or Europe were used. For a soldering flux the acid mixture of the tinners was used (i. e., 50 per cent. hydrochloric acid to which some scrap zinc had been added). As the stove bolts vary considerably in diameter it is desirable to take the clamp for the holder to the hardware store and select the bolts that fit properly. In case one dislikes the thread on the end of the bolt—and it is more or less objectionable—a longer bolt may be obtained and cut down to the proper length with a hacksaw. If the cut end is then smoothed with a file, one will have holders as smooth and finished as those sent out by the makers of the microtome. Indeed it is hoped that the makers of the microtome will supply cheap holders. One should get them for at most $5.00 per hundred. They do not cost half that if made as above indicated.

The convenience of having plenty of holders has more than fulfilled expectations. Not only are the research students undisturbed with their blocks for series, but in the ordinary laboratory work, if a specimen has proved of sufficient excellence for future use, the block is left on the holder, the end sealed with melted paraffin and the whole placed in a shell vial as shown in the figure (Fig. 2). It can be readily appreciated by the busy director of a laboratory that sections for a class from this block could be obtained with the minimum of time and labor.

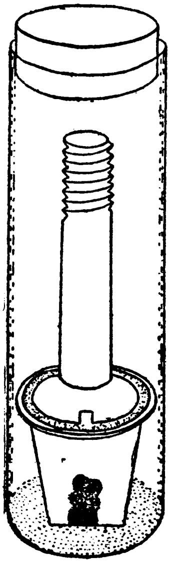

Fig. 2. Shell vial containing a paraffin block cemented to one of the stove-bolt holders. The imbedded specimen is indicated by the shading.

Another piece of apparatus urgently needed for a ribbon microtome is a suitable tray or drawer to hold the ribbons. Such a drawer is shown in Fig. 3. If a tray like this is covered by a sheet of smooth paper the ribbons may be laid on the paper as they are cut, and then numbered so that in making the series no mistakes need occur. In addition the name of the object and the thickness of the sections can easily be added.

When the tray is filled with ribbons, another similar tray is placed over it to prevent disarrangement of the ribbons by currents of air. With these trays ribbons have been preserved without apparent deterioration for a year in a cool basement. It should be stated, however, that the sections are not so easily straightened with warm water after preserving them so long.

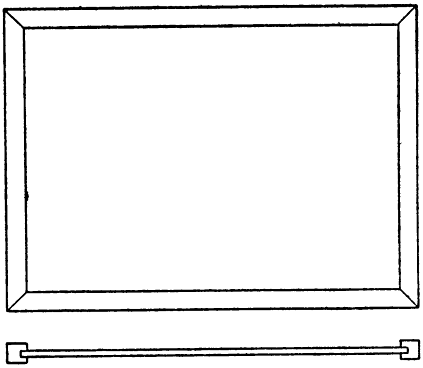

Fig. 3. Tray or drawer of wood for ribbons of sections or for mounted slides. Face and sectional view. (From the Journal of Applied Microscopy.)

These trays were originally designed for storing mounted slides and they were made the size of the laboratory lockers (30x43 centimeters), a size which easily holds fifty slides. Their cost is $12.00 per hundred in Ithaca.

The last piece of apparatus to be mentioned is a receptacle for preparing the dichromate and sulfuric acid cleaning mixture for glass. As is well known this is used by the liter in all chemical, bacteriological and in many histological laboratories. (Formula from Dr. G. C. Caldwell's laboratory-guide: Dichromate of potash 40 grams dissolved in 150 cc. of water. To this is slowly added 230 cc. of sulfuric acid.) It was found difficult to prepare this mixture on account of the great heat on adding the sulfuric acid and on account of the corrosive nature of the mixture. Finally a low, flaring iron kettle was selected and lined with heavy sheet lead. The lead is not appreciably corroded and the kettle does not break by the heat. When the mixture is cool it is poured off into bottles.

Histological and Embryological Laboratory, Cornell University.